Effects of dietary fat and fiber on plasma and urine androgens and estrogens in men: a controlled feeding study

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Abstract: We conducted a controlled feeding study to evaluate the effects of fat and fiber consumption on plasma and urine sex hormones in men. The study had a crossover design and included 43 healthy men aged l9-56 y. Men were initially randomly assigned to either a low-fat, high-fiber or high-fat, low-fiber diet for 10 wk and after a 2-wk washout period crossed over to the other diet. The energy content of diets was varied to maintain constant body weight but averaged ≈13.3 MJ (3170 kcal)/d on both diets. The low-fat diet provided 18.8% of energy from fat with a ratio of polyunsaturated to saturated fat (P:S) of 1.3, whereas the high-fat diet provided 41.0% of energy from fat with a P:S of 0.6. Total dietary fiber consumption from the low- and high-fat diets averaged 4.6 and 2.0 g • MJ^{-1} • d^{-1}, respectively. Mean plasma concentrations of total and sex-hormone-binding-globulin (SHBG)-bonnd testosterone were 13% and 15% higher, respectively, on the high-fat, low-fiber diet and the difference from the low-fat, high-fiber diet was significant for the SHBG-bound fraction *(P* = 0.04). Men's daily urinary excretion of testosterone also was 13% higher with the high-fat, low-fiber diet than with the low-fat, high-fiber diet *(P* = 0.01). Conversely, their urinary excretion of estradiol and estrone and taeir 2-hydroxy metabolites were 12-28% lower with the high-fat, low-fiber diet *(P* £ 0.01). Results of this study suggest that diet may alter endogenous sex hormone metabolism in men.